

**STATE OF ILLINOIS  
ILLINOIS COMMERCE COMMISSION**

Illinois Commerce Commission	)	
On its Own Motion	)	
v.	)	
The Peoples Gas Light and Coke Company	)	
	)	
Investigation of the cost, scope, schedule	)	Docket No. 16-0376
and other issues related to the Peoples	)	
Gas Light and Coke Company's natural	)	
gas system modernization program and	)	
the establishment of Program policies and	)	
practices pursuant to Section 8-501 and	)	
10-101 of the Public Utilities Act.	)	

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**DIRECT TESTIMONY OF  
SEBASTIAN COPPOLA  
ON BEHALF OF  
THE PEOPLE OF THE STATE OF ILLINOIS**

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**AG Exhibit 2.0**

**October 11, 2016**

**PUBLIC VERSION**

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**INTRODUCTION**

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A. My name is Sebastian Coppola. My business address is 5928 Southgate Rd., Rochester, Michigan 48306.

**Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

A. I am President of Corporate Analytics, Inc., a business consulting firm specializing in financial and strategic business issues in the fields of energy and utility regulation.

**Q. PLEASE SUMMARIZE YOUR PROFESSIONAL QUALIFICATIONS.**

A. I have more than thirty years of experience in public utility and related energy work, both as a consultant and utility company executive. I have testified in several regulatory proceedings before various regulatory commissions. I have prepared and/or filed testimony in general rate case proceedings, revenue decoupling reconciliations, gas conservation programs, gas cost and power supply cost recovery mechanisms, and pipeline and meter infrastructure replacement cases. AG Exhibit 2.1 describes my regulated-energy qualifications in more detail.

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?**

A. The Illinois Commerce Commission (“the Commission” or “ICC”) initiated this docket to investigate the cost, scope, schedule, and other issues related to The Peoples Gas Light and Coke Company’s (“Peoples Gas” or “PGL”) natural gas system modernization program

20 and the establishment of program policies and practices, as well as near- and long-term  
21 reporting and monitoring of the program. The Commission's action in this docket follows  
22 several previous proceedings with regard to the Accelerated Main Replacement Program  
23 ("AMRP"), as the system modernization program was previously called, including ICC  
24 Docket No. 14-0496 in which I provided testimony about the AMRP. Peoples Gas now  
25 refers to the AMRP and other infrastructure upgrades as its system modernization program  
26 ("SMP").<sup>1</sup>

27 I have been asked by the Office of the Attorney General, on behalf of the People of the  
28 State of Illinois ("AG"), to provide an overall assessment of the AMRP/SMP and the  
29 financial model outcomes presented by PGL, and to perform an independent analysis of the  
30 impact of those and other program outcomes on residential customer bills. Allen Neale is  
31 also submitting testimony on behalf of the AG concerning engineering and system safety  
32 aspects of the AMRP.

33 **Q. DO YOU HAVE EXPERIENCE WITH PIPELINE AND METER**  
34 **INFRASTRUCTURE REPLACEMENT PROGRAMS?**

35 A. Yes. In the past three years, on behalf of the Michigan Department of the Attorney  
36 General, I analyzed the programs to accelerate the cast iron and unprotected steel pipeline  
37 replacement programs of the two largest gas utilities in Michigan, which serve all the  
38 major cities in Michigan, including Detroit. My review of the Michigan programs

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<sup>1</sup> I refer to Peoples Gas's program as the accelerated main replacement program ("AMRP") in my testimony. PGL's new moniker for the program presumes an outcome for this case; in particular, an expansion into other infrastructure replacement programs. While that may be Peoples Gas's preferred outcome, that question has not been decided and should be one of the issues that the Commission should consider as part of this docket.

39 included the proposed acceleration of relocating inside meters to the outside of  
40 customers' homes. The issues addressed in the Michigan gas utilities' infrastructure  
41 replacement programs related to ensuring the safety and reliability of the utility networks,  
42 as well as the proposed plans' impact on customer rates, are very similar to the issues in  
43 this docket of whether PGL's plan and scope of the AMRP/SMP should be modified. As  
44 stated earlier, I also testified extensively on the AMRP in ICC Docket No. 14-0496 about  
45 several concerns with program cost overruns, program mismanagement, and customer  
46 affordability issues. *See* AG Exhibits 2.0 *et seq.*, 4.0 *et seq.*, 5.0 *et seq.*, and 6.0 *et seq.* in  
47 that proceeding.

48 **Q. DO YOU HAVE ANY EXHIBITS SUPPORTING YOUR TESTIMONY?**

49 A. Yes. I am sponsoring AG Exhibits 2.1 through 2.11.

50 **Q. WHAT INFORMATION HAVE YOU RELIED UPON IN FORMULATING**  
51 **YOUR RECOMMENDATIONS?**

52 A. I have relied on Peoples Gas's testimony, exhibits, and data request responses in this  
53 proceeding. I have also relied on information gathered during the AMRP Workshops  
54 process conducted by the ICC Staff during the first three months of 2016 and which is  
55 discussed in the May 31, 2016 ICC Staff Report to the Commission. Additionally, I have  
56 relied on testimony, regulatory filings, and other information provided by PGL and the  
57 Joint Applicants in ICC Docket No. 14-0496, as well as the proceedings in ICC Docket  
58 No. 15-0608 regarding the investigation concerning possible violations of Section 5-  
59 202.1 of the Public Utilities Act ("the Act").

I have also reviewed: (1) the Commission's orders in Peoples Gas's 2009, 2012 and 2014 rate cases; (2) Peoples Gas's and other parties' testimony in ICC Docket No. 09-0167 (Peoples Gas's 2009 rate case) – which is the case where the Commission approved a tariff rider permitting the assessment of monthly customer surcharges for the AMRP investment, and a 2030 AMRP completion date; (3) the transcript of the deliberations of the Illinois House of Representatives in passing legislation in May 2013 authorizing the establishment of the infrastructure replacement rider (PGL's Rider QIP); (4) Peoples Gas's, Staff's, and Intervenors' testimony related to PGL's AMRP investment in its last general rate case, ICC Docket Nos. 14-0224/0225 (cons.); and (5) Peoples Gas's responses to Staff and Intervenors' data requests in that docket.

## **SUMMARY CONCLUSIONS AND RECOMMENDATIONS**

**Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.**

**A.** My conclusions and recommendations are as follows:

1. Mr. Hesselbach's direct testimony did not fully address the Commission's directive in this docket to investigate the cost, scope, schedule and other issues related to the natural gas system modernization program. His testimony is devoid of any explanation of why the New Management Target case<sup>2</sup> is reasonable or achievable.

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<sup>2</sup> Pursuant to the Commission's Order in Docket No. 14-0496, Peoples Gas submitted its proposed scheduling plan and cost plan model for the AMRP on November 30, 2015. Docket No. 14-0496, Final Order, Appendix A at 1 (Condition No. 5) (June 24, 2015). PGL retained Burns & McDonnell to perform these tasks. Burns and McDonnell posited three cost cases with two target completion dates for the AMRP – the New Management Target Case, the Contingency Case, and the Pre-Acquisition Path. Burns & McDonnell's New Management Target Case is the most ambitious of the three scenarios in terms of expected total project cost, estimating that the New Management Target Case will cost at least \$1.5 billion less than the next lowest-cost scenario – the Contingency Case.

77 He also did not adequately address alternatives to reduce the cost impact of the  
78 AMRP on customers' bills.

79 2. The New Management Target Case, with forecasted capital expenditures of \$6.83  
80 billion to \$7.81 billion depending on the completion date, significantly understates  
81 the future cost of the AMRP. All indications are that the likely cost to complete the  
82 program will be closer to \$9 to \$10 billion.

83 3. The customer bill impact analysis presented by PGL is misleading. It misrepresents  
84 the cumulative impact of the AMRP on customers' bills by averaging the annual  
85 percent increases in the annual bill over the entire 30- to 40-year timeframe needed  
86 to complete the project. Under the most likely cost scenario if PGL's capital  
87 spending plans prevail, the annual amount for recovery of AMRP costs that will be  
88 included in the average residential heating customer's bill will reach \$153 in 2018  
89 and will peak at \$782 by 2031. The total cost billed to the average residential  
90 heating customer over the life of the program will likely be in excess of \$18,000.<sup>3</sup>  
91 The following Table 1 depicts these bill impacts.

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<sup>3</sup> Assumes the Burns & McDonnell Pre-Acquisition Path case with program completion in 2030.

<b>Table 1</b> <b>AMRP Customer Bill Impact</b> <b>Average Residential Heating Customer</b>		
	PGL Current Best Case <sup>1</sup>	Most Likely Outcome <sup>2</sup>
AMRP Program Construction Costs (Billions)	\$ 6.83	\$ 9.41
AMRP Annual Cost to Customer at peak	\$ 584.95	\$ 782.07
AMRP Cost to Customer for lifetime of program	\$ 14,557	\$ 18,491
Total Customer Bill in 2016 <sup>3</sup>	N/A	\$ 1,085
Total Customer Bill in 15 Years <sup>3</sup>	N/A	\$ 2,236
Notes: (1) PGL 2030 Management Target Case not deemed credible. (2) PGL 2030 Pre-Acquisition Path case if ICC does not adopt a scaled down program. (3) Includes all customer bill components: AMRP, distribution charge, gas costs, surcharges, rate riders and sales taxes.		

4. The annual total gas bill, inclusive of base rates, riders, cost of gas and taxes, for the average residential heating customer of PGL will more than double in 15 years to \$2,236 from the current amount of \$1,085 in 2016 when assuming reasonable future cost escalations.
5. Peoples Gas has the highest monthly customer charge and gas distribution rates of any major gas utility serving customers in the State of Illinois, and the situation will most likely get worse in future years. From 2008 to 2015, PGL increased base rates by \$327.1 million, or a 73.8% increase over a seven-year period. As identified by PGL, by far the largest driver of these rate increases has been the capital investments and related costs for the AMRP.<sup>4</sup>

<sup>4</sup> ICC Docket No. 11-0281, PGL Ex. 1.0 at 10-11; ICC Docket No. 12-0512, PGL Ex. 1.0 at 3. ("The largest cause of the increase is Peoples Gas' capital investments to improve the reliability of its gas distribution system and the quality of its services. The largest capital investments currently being made by Peoples Gas are for main replacement, in particular the replacement of cast iron and ductile iron gas main in the City of Chicago."); ICC Docket No. 14-0225, PGL Ex. 1.0 at 5. ("The costs that Peoples Gas incurs in order to serve its customers have



- 103 6. 34% of PGL's customers live below 150% of the federal poverty level. The  
104 Median Household Income in the City of Chicago in 2014 was \$47,831.  
105 Approximately 349,000 households earned under \$30,000.<sup>5</sup>
- 106 7. Many PGL customers have had serious difficulty in paying gas bills in recent years,  
107 with approximately 230,000 accounts receiving disconnection notices and 77,000  
108 accounts actually disconnected during the winter of 2013-14.
- 109 8. The continuation and likely escalation of the Peoples Gas's recommended Three-  
110 Year Plan capital expenditures program will result in extreme financial burdens for  
111 large numbers of PGL residential customers of PGL in the coming years, making it  
112 more difficult for these customers to afford essential natural gas service.
- 113 9. I recommend that the Commission reject PGL's proposed rolling Three-Year  
114 Capital Plan which would further escalate expenditures into future years and  
115 perpetuate regular rate increases.
- 116 10. A lower annual capital expenditure program of \$130 million with a 3% annual cost  
117 escalation for the AMRP together with a longer implementation time horizon of  
118 2053 would make the cost of the program more affordable for customers.<sup>6</sup>
- 119 11. Table 2 below shows a comparison of how a more moderate, scaled down, capital  
120 program can be much more affordable for customers.

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increased significantly in recent years, due primarily to main replacement and other increased plant investment costs, and increased operating expenses, such as increased costs of pipeline safety and other compliance work.”)

<sup>5</sup> American Community Survey (2014:5-Year data), Tables B17002, B19001, B19013, B19081.

<sup>6</sup> The AG's recommended capital expenditure level presumes that system safety is assured. Mr. Neale discusses system safety issues in his testimony.

<b>Table 2</b> <b>AMRP Customer Bill Impact Moderated</b> <b>Average Residential Heating Customer</b>		
	PGL Most Likely Outcome 1	Customer Affordable Program <sup>2</sup>
AMRP Program Construction Costs (Billions)	\$ 9.41	\$ 9.69
Target Completion Date	2030	2053
AMRP Annual Cost to Customer at peak	\$ 782.07	\$ 580.79
AMRP Cost to Customer for lifetime of program	\$ 18,491	\$ 18,226
Present Value of AMRP Lifetime Cost	\$ 4,574	\$ 2,484
Total Customer Bill in 2016 <sup>3</sup>	\$ 1,085	\$ 1,085
Total Customer Bill in 15 Years <sup>3</sup>	\$ 2,236	\$ 1,678
Notes: (1) PGL 2030 Pre-Acquisition Path case if ICC does not adopt a scaled down program. (2) \$130 MM Capital Budget Case with 3% annual escalation. (3) Includes all customer bill components: AMRP, distribution charge, gas costs, surcharges, rate riders and sales taxes.		

12. Consistent with the recommendations of AG witness Allen Neale, I recommend that the Commission direct PGL to redefine the scope of the AMRP and prioritize its mains, service lines and meter move-out program in order to replace the riskiest segments first within an established annual capital budget significantly lower than what it has proposed.

The remainder of my testimony provides further details and support to these summary conclusions and recommendations.

**ASSESSMENT OF AMRP MODEL OUTCOMES**

**Q. PLEASE DESCRIBE THE AMRP MODEL COST OUTCOMES AND RELATED UNDERLYING ASSUMPTIONS INCLUDED IN THE BURNS & MCDONNELL STUDY FILED BY PGL ON NOVEMBER 30, 2015 PURSUANT TO THE COMMISSION’S ORDER IN DOCKET NO. 14-0496<sup>7</sup>.**

**A.** In presenting his analysis of the impact of the AMRP on customer bills, PGL witness Andrew Hesselbach relied on the capital expenditures projected in a three-year plan and a long-term program implementation model prepared by Burns & McDonnell. The Burns & McDonnell Program Level Cost Forecast and Schedule Model (“B&M Model”) defined certain AMRP cost and completion outcomes based on varying assumptions summarized into three cases.

The construction cost and completion date of each of the cases are shown in the following Table 3.

<b>Table 3</b>			
<b>SMP Construction Cost</b>			
<b>By Target Completion Date</b>			
	<b>New Management Target Case</b>	<b>Contingency Case with Higher Restoration Costs</b>	<b>PGL Pre-Acquisition Path</b>
<b>2030</b>	\$6.83 Billion	\$8.33 Billion	\$9.41 Billion
<b>2040</b>	\$7.81 Billion	\$9.69 Billion	\$10.96 Billion

<sup>7</sup> See <https://www.icc.illinois.gov/docket/files.aspx?no=14-0496&docId=237003>; <https://www.icc.illinois.gov/docket/files.aspx?no=14-0496&docId=237007>.

144 To develop the outcomes for each of the cases, Burns & McDonnell started the process  
145 by compiling actual historical cost data for the installation of mains, services, meters and  
146 other facilities by PGL during the period 2013 to 2015. This historical cost data was  
147 refined by validating it against as-built field results and applying engineering judgment to  
148 the scope of work for a specific neighborhood.<sup>8</sup> This approach served as the basis to  
149 determine the Pre-Acquisition Path base case. This base case assumed annual cost  
150 escalation rates of between 2.1% to 5.0% in labor, material and other costs. Burns &  
151 McDonnell also applied a 10% cost increase contingency reserve to most of the cost  
152 components.

153 Additionally, the base case assumes that certain work will be performed out of sequence  
154 to address Public Improvements (“PI”) and System Improvements (“SI”) that may arise  
155 before the scheduled work is due to be completed. This out-of-sequence work reduces  
156 the scope of future work to be performed in the neighborhoods. To allow for this out-of-  
157 sequence work, Burns and McDonnell applied a 50% credit. According to PGL, this is  
158 an actual historical-based factor. However, it is not clear how it is applied within the  
159 model. The B&M Model also modeled two target end dates for the program, an  
160 accelerated end date of 2030 and more moderate 2040 end date. The 2040 target date  
161 case has a slower pace of replacement of mains, service lines, and meters during the  
162 period of 2016 and 2030 than the 2030 case, and extends the remaining work over the  
163 subsequent 10 years.<sup>9</sup>

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<sup>8</sup> PGL responses to data requests AG 3.07 and AG 3.08.

<sup>9</sup> B&M Model at 41-42.

164 **Q. PLEASE DESCRIBE HOW BURNS & MCDONNELL DEVELOPED THE COST**  
165 **PROJECTIONS FOR THE CONTINGENCY AND NEW MANAGEMENT**  
166 **TARGET CASES.**

167 A. According to a response to a data request, PGL stated that Burns & McDonnell  
168 developed the Contingency and New Management Target cases by using the information  
169 from the Pre-Acquisition base case and applying certain efficiency factors to determine  
170 the program cost for each of the two cases and the respective time horizons.<sup>10</sup>

171 **Q. WHAT EFFICIENCY FACTORS DID BURNS & MCDONNELL APPLY TO**  
172 **ARRIVE AT ITS COST PROJECTIONS FOR THE “CONTINGENCY CASE”?**

173 A. Burns & McDonnell applied four efficiency factors: a 60% PI/SI Out of Sequence Work  
174 Credit; a 90% Installation efficiency; a 85% Program Management Efficiency; and a 10%  
175 reduction in Restoration Costs.<sup>11</sup> The efficiency factors were established by PGL and  
176 provided to Burns & McDonnell for use in the model.<sup>12</sup>

177 **Q. PLEASE DESCRIBE EACH OF THESE FACTORS AND PGL’S ASSOCIATED**  
178 **PROGRAM COST REDUCTION FROM THE PRE-ACQUISITION BASE CASE.**

179 A. PGL assumes that PI and SI out-of-sequence work will increase and therefore the credit  
180 has been increased from 50% to 60%. The basis for this increase has not been explained

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<sup>10</sup> PGL response to data request AG 3.04(h).

<sup>11</sup> *Id.* at 9.

<sup>12</sup> PGL response to data request AG 3.04.

181 or justified by PGL. However, it reduces the cost of the program from the base case by  
182 \$20 million if the project is completed in 2030 or \$40 million if completed in 2040.

183 PGL assumes that it will be able to achieve improvements in technology or construction  
184 methods in the installation of mains, meters, and service lines. The 90% Installation  
185 Efficiency factor translates into a 10% increase in efficiency from the base case. The basis  
186 or justification for this increase has not been explained by PGL and seems more  
187 aspirational than rooted in any actual experience or work analysis. However, it reduces  
188 the cost of the program from the base case by \$540 in the 2030 completion date scenario  
189 and \$640 million if completed in 2040.

190 For the 85% Program Management efficiency factor, PGL assumes it can do a better job  
191 of managing the AMRP internally than with the previous external management by Jacobs  
192 Engineering (“Jacobs”). This 15% improvement in program management reduces the cost  
193 of the program from the base case by \$340 million if the project is completed in 2030 and  
194 \$290 million if it is finished in 2040.

195 For the Contingency Case, PGL has also assumed it can achieve a 10% reduction in  
196 Restoration Costs for street, lawns, sidewalks and other areas damaged during the main  
197 and service line installations. Like the other assumed cost saving items, the hoped-for  
198 savings are aspirational as Peoples Gas has provided no basis or justification for this  
199 assumption. However, if achieved, it would reduce the cost of the program from the base  
200 case by \$320 million for the 2030 completion date and \$280 million for a 2040 completion  
201 date.

In total, these four assumed efficiencies account for most of the cost difference of \$1.1 billion and \$1.3 billion between the Contingency Case program costs and the Pre-Acquisition Path base for the respective 2030 and 2040 completion dates.<sup>13</sup> The following Table 4 summarizes these cost savings anticipated by PGL and Burns & McDonnell.

Table 4			
CONTINGENCY CASE EFFICIENCY FACTOR	PGL's Projected Savings 2030 Completion Date	PGL's Projected Savings 2040 Completion Date	Evidentiary Support That Savings Will Be Achieved
60% PI/SI Out of Sequence Work Credit	\$20 Million	\$40 Million	None
90% Installation Efficiency factor	\$540 Million	\$640 Million	None
85% Program Management Efficiency	\$340 Million	\$290 Million	None
10% Reduction in Restoration Costs	\$320 Million	\$280 Million	Minimal
<b>Total Projected Savings</b>	<b>\$1.220 Billion</b>	<b>\$1.250 Billion</b>	

**Q. HOW DO THE EFFICIENCY FACTORS BURNS & MCDONNELL APPLIED TO DETERMINE ITS COST PROJECTIONS FOR THE “NEW MANAGEMENT TARGET CASE” DIFFER FROM ITS EFFICIENCY FACTORS ASSUMPTIONS FOR THE “CONTINGENCY CASE” JUST DESCRIBED?**

A. Burns & McDonnell applied six efficiency factors, instead of the four applied in the Contingency Case. Four are more aggressive variants of the ones used in the Contingency Case. The two new factors are a 14% Efficiency in Contract Labor and a 7.5%

<sup>13</sup> The cost efficiencies discussed above total to \$1.2 billion and \$1.3 billion respectively for the 2030 and 2040 end date cases. These numbers are slightly higher than the total difference in the program costs between the two cases. The difference appears to be the result of the interaction and interdependence of the efficiency factors in calculating the total cost of the program versus isolating the impact of each specific factor.

213 Construction Contingency.<sup>14</sup> Based on information provided by PGL in response to a data  
214 request, I will briefly describe each of the six factors and the projected reduction in  
215 program construction costs from the Pre-Acquisition Path base case.<sup>15</sup>

216 In the New Management Target Case, PGL assumes that the savings resulting from PI and  
217 SI out-of-sequence work will be greater than in the Contingency Case; the credit is  
218 increased from 60% to 75%. This is a significant increase from the 50% factor used in the  
219 Pre-Acquisition base case. The basis or justification for this increase has not been  
220 explained by PGL. If achieved, which is far from certain, it reduces the cost of the  
221 program from the base case by \$150 million if the AMRP is done by 2030 or \$180 million  
222 if done by 2040.

223 The 14% Efficiency factor in Contract Labor represents the rate at which PGL contractors  
224 complete the work. It assumes that by changing contracting techniques, utilizing unit-  
225 based contracts with key performance indicators and longer--term contracts, PGL can  
226 achieve a reduction in contractor labor costs. With no documented basis or justification to  
227 support a 14% reduction in contract labor costs, this assumption appears to be more  
228 aspirational than real. However, it reduces the cost of the program from the base case by  
229 \$150 million for a 2030 completion date and \$280 million for a 2040 completion date.

230 In the New Management Target Case, PGL also assumes a lower contingency cost reserve  
231 rate of 7.5% versus the base case of 10%. In response to the data request mentioned  
232 earlier, PGL stated that a reduction in program cost uncertainty is warranted over the

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<sup>14</sup> B&M Model at 9.

<sup>15</sup> PGL response to data request AG 3.04.



233 duration of the program as PGL achieves program experience coupled with the repeatable  
234 nature of the construction activities. Although this may make sense once the new  
235 management team gains more experience with the AMRP in later years, there is no record  
236 yet that such a reduction in contingency costs is justified. In fact, the opposite has been  
237 true in recent years, where cost overruns have exceeded the 10% contingency factor by  
238 many folds. The reduction in the contingency rate to 7.5% is at best premature and  
239 certainly not realistic at this point in time. However, if achieved, the lower contingency  
240 cost would reduce the cost of the program from the base case by \$355 million assuming a  
241 2030 completion date and \$612 million if the project is done by 2040.<sup>16</sup>

242 With regard to installation efficiency, Burns & McDonnell used an 80% factor which  
243 translates into a 20% efficiency increase from the base case. This is a doubling of the  
244 10% efficiency assumed in the Contingency Case. As with every other cost reduction  
245 category, Peoples Gas provided no basis or justification for this increase, and again the  
246 projection seems more aspirational than based on any actual experience or work analysis.  
247 However, assuming PGL's estimates prove to be true, program cost from the base case  
248 would be reduced by \$1.1 billion for the 2030 end date and \$1.3 billion for the 2040  
249 completion date.

250 For Program Management efficiency, Burns & McDonnell used a 75% efficiency factor.  
251 This translates to a 25% efficiency improvement over the base case and a two-thirds  
252 increase over the 15% assumed for the Contingency Case. The 25% efficiency  
253 assumption appears to be very optimistic and assumes that PGL can achieve significant

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<sup>16</sup> *Id.*, B&M Model Excel files.

cost savings by bringing the management of the AMRP program in-house. The 25% improvement in program management reduces the cost of the program from the base case by \$490 million if done by 2030 and \$530 million if completed in 2040.

For the New Management Target Case, PGL has also assumed it can achieve a 40% reduction in Restoration Costs from the base case, which is 30 percentage points of incremental savings over the Contingency Case. PGL offers two reasons to justify this significant reduction. First, it plans to reduce the restoration of street intersections by double-decking the main line on each side of the street. Second, it expects that changes in the regulations by the Chicago Department of Transportation (“CDOT”) will reduce the amount of work required for intersection replacement.

With regard to the first reason, it seems that increasing double-decking will increase the cost of main installations. It is not clear if the B&M Model for the New Management Target Case takes that additional cost into consideration. However, what is known is that the B&M Model for the base case assumes a ratio of 1.3 for new main replacement to old main retirements to account for double-decking.<sup>17</sup> The actual ratio from 2011 to 2015 has been 1.6.<sup>18</sup> Therefore, the B&M Model seems to have underestimated the amount and cost of the double decking that is actually occurring.

With regard to the second reason, it is not clear what changes have occurred recently with CDOT regulations that reduce the amount of work required to restore street intersections.

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<sup>17</sup> B&M Model at 29, paragraph 3.1.18.

<sup>18</sup> PGL response to data request AG 3.12.

273 PGL has been vocal in the past that the opposite has been occurring: that is, more stringent  
274 regulations from CDOT have increased the cost of street restorations.

275 Despite these questionable rationales, PGL assumes it will achieve a 40% reduction in the  
276 cost of restorations, which would reduce the cost of the program from the base case by a  
277 lofty \$1.1 billion for 2030 and \$1.3 billion for 2040.

278 In total, the assumed efficiencies account for the cost difference of \$2.6 billion and \$3.2  
279 billion between the New Management Target Case program costs and the Pre-Acquisition  
280 Path base case for the respective 2030 and 2040 completion dates.<sup>19</sup>

281 The following Table 5 summarizes these costs savings anticipated by PGL and Burns &  
282 McDonnell for the New Management Target Case.

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<sup>19</sup> The cost efficiencies discussed add to \$3.3 billion and \$4.1 billion respectively for the 2030 and 2040 end date cases. The difference between the \$3.3 billion and \$4.1 billion figures and the \$2.6 billion and \$3.2 billion projected savings in the Burns & McDonnell report appears to be the result of the interaction and interdependence of the efficiency factors in calculating the total cost of the program versus isolating the impact of each specific factor.

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Table 5			
NEW MANAGEMENT TARGET CASE EFFICIENCY FACTOR	PGL's Projected Savings 2030 Completion Date	PGL's Projected Savings 2040 Completion Date	Evidentiary Support That Savings Will Be Achieved
75% PI/SI Out of Sequence Work Credit	\$150 Million	\$180 Million	None
14% Efficiency in Contract Labor	\$150 Million	\$280 Million	None
7.5% Contingency Cost Reserve Rate	\$355 Million	\$612 Million	Minimal
80% Installation Efficiency factor	\$1.1 Billion	\$1.3 Billion	None
75% Program Management Efficiency	\$490 Million	\$530 Million	None
40% Reduction in Restoration Costs	\$1.1 Billion	\$1.3 Billion	Minimal
<b>Total Projected Savings</b>	\$3.345 Billion	\$4.202 Billion	

284

285 **Q. DID PGL WITNESS HESSELBACH PROVIDE ANY FURTHER EXPLANATION**  
286 **OR JUSTIFICATION FOR THE NEW MANAGEMENT TARGET CASE OR THE**  
287 **CONTINGENCY CASE AND THE UNDERLYING COST EFFICIENCY**  
288 **ASSUMPTIONS IN HIS PRE-FILED TESTIMONY?**

289 **A.** No. The absence of a robust discussion about the cost projections and the reasonableness  
290 of the underlying assumptions used to develop the New Management Target Case and the  
291 Contingency Case is very perplexing. The Commission's directive in this docket was for  
292 PGL to undertake an investigation of the cost, scope, schedule and other issues related to  
293 the natural gas system modernization. Mr. Hesselbach's testimony falls far short of that

294 directive. The lack of further explanations and justification seems to indicate his belief  
295 that the previously filed B&M Model stands on its own and adequately addresses the  
296 Commission's directive. Although the B&M Model discusses the assumptions and  
297 processes used in developing the Pre-Acquisition Path base case, it is devoid of any  
298 support for the assumptions used in preparing the New Management Target and the  
299 Contingency cases and why they are reasonable assumptions to use. In fact, Mr.  
300 Hesselbach's testimony provides no discussion of the three program cost cases other than  
301 briefly discussing the use of a target end date versus a fixed end date.

302 His testimony on cost projections is primarily focused on the three-year plan and the  
303 recovery of AMRP costs through Rider QIP. Although discussion of these items is  
304 relevant, they do not excuse the failure to provide a more complete discussion and  
305 explanation of the longer term aspects of the AMRP consistent with the Commission's  
306 directive in this case.

307 **Q. WHAT IS YOUR OVERALL ASSESSMENT OF THE COST PROJECTIONS**  
308 **INCLUDED IN THE B&M MODEL FOR EACH OF THE THREE CASES?**

309 A. Burns & McDonnell seems to have taken a detailed and cost-based approach in  
310 developing the Pre-Acquisition Path Case within the constraints of the 2030 and 2040 end  
311 date scenarios. The assumptions and cost projections for this base case appear reasonable  
312 since they are based on actual cost data from 2013 to 2015, and utilize as-built cost data  
313 and engineering judgment. Therefore, I assign a high degree of credibility to the \$9.41

314 billion and \$10.96 billion cost projections for the Pre-Acquisition Path case depending on  
315 either a 2030 or 2040 targeted program end date.

316 My confidence in the Pre-Acquisition Path projections is buttressed by the cost projection  
317 made in early 2015 by Ken VanOverberghe, project manager for Jacobs. Mr.

318 VanOverberghe was asked by Peoples Gas's prior management to develop a cost estimate  
319 and likely completion date for the AMRP. In preparing his cost projections for the

320 AMRP, Mr. VanOverberghe performed a probabilistic analysis of the program total cost

321 and its likely end date. The Monte Carlo simulation analysis, which involved 10,000

322 simulation iterations, showed an [BEGIN CONFIDENTIAL] [REDACTED]

323 [REDACTED] [END

324 CONFIDENTIAL]. Mr. VanOverberghe also compiled a deterministic baseline estimated

325 cost of [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL] using a similar

326 approach to that used by Burns & McDonnell. A deterministic analysis merely adds the

327 unit costs needed to complete a project, but does not assess the probability of the

328 likelihood that each outcome will materialize. The Monte Carlo analysis showed that a

329 program cost of [BEGIN CONFIDENTIAL] [REDACTED]

330 [REDACTED] [END CONFIDENTIAL].<sup>20</sup> AG Exhibit 2.2 CONF provides pertinent

331 sections of Mr. VanOverberghe's report.

332 With regard to the Contingency Case, the cost efficiency assumptions need to be better

333 supported and justified. However, some of the assumed cost reductions seem within reach

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<sup>20</sup> Capital Construction Program Forecast Year 2015 Peoples Gas and Light, AMRP-RPT-LTP-0001, originator: K. VanOverberghe.

of PGL's new management team. The next couple of years will provide an indication of how realistic the cost-saving assumptions are, as program execution and actual cost data either validates or disproves the assumptions. Burns & McDonnell's Contingency Case estimates between \$8.3 billion for a 2030 completion date and \$9.7 billion for a 2040 completion date may be within reach. However, this case with its target end dates of 2030 and 2040 still has a detrimental impact on customer bills.<sup>21</sup>

As to the New Management Target Case, the cost efficiency assumptions are mostly unsupported or contradictory. The high percentage of cost efficiency improvement that has been projected is unrealistic. The probability that those cost reductions will be achieved is extremely small. The premise that Peoples Gas can achieve the projected savings levels across so many factors that affect program costs for a project of the magnitude and complexity of the AMRP seems fantastical. My conclusion and recommendation is that the Commission should not rely on the potential cost outcomes and customer bill impacts of the New Management Target Case presented by PGL in the B&M Model and in this proceeding.

#### **AMRP COST IMPACT ON CUSTOMERS**

**Q. PLEASE DESCRIBE THE KEY ITEMS THAT MUST BE CONSIDERED WHEN DETERMINING THE COST IMPACT OF THE AMRP/SMP ON CUSTOMER BILLS.**

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<sup>21</sup> I will discuss later in my testimony how this detrimental impact can be mitigated by minimizing annual capital expenditures and extending the completion date of the program.

A. The affordability of customer bills and specifically the impact on those bills of the costs of the AMRP cannot be presented in isolation. They must include all items that are likely to affect the total bill over the coming years. The following items provide some guiding principles:

1. The calculation of the projected customer bill impacts must include all bill components: monthly customer charge, gas delivery charges, gas commodity charge, riders, surcharges and taxes. These bill components need to be forecasted for future years where possible.
2. The impact on customer bills needs to be shown over time. The AMRP is not a short-term program; it spans over multiple decades and the cost impact accumulates over time.
3. Peoples Gas's simple average annual percent cost increase over a long timeframe is misleading. It misrepresents the cumulative impact on customers' bills and customers' ability to pay for the program.
4. PGL has a large number of low-income customers. The inability of those customers to pay significant increases in gas bills given their poverty-level income and stagnant wage growth must be strong considerations in establishing a reasonable level of annual capital expenditures and a target completion end date for the AMRP.

**Q. WHAT IS YOUR ASSESSMENT OF MR. HESSELBACH'S TESTIMONY ON THE FINANCIAL IMPACT OF THE AMRP ON RESIDENTIAL CUSTOMER BILLS?**



375 A. Mr. Hesselbach's testimony on this point is misleading and not terribly helpful. Mr.  
376 Hesselbach briefly discusses the impact of the AMRP/SMP on customer bills on page 32  
377 of his testimony and provides a reference to PGL Ex. 1.3 for further details. Both his  
378 testimony and the exhibit provide what could be interpreted as a rather moderate average  
379 increase in residential heating customer bills of \$1.67 to \$2.78 per month and \$20.00 to  
380 \$33.40 per year. The testimony and exhibit also imply a relatively innocuous average  
381 annual increase of 1.6% to 2.8% depending on the timeframe presented.

382 In calculating the cost impact, PGL took the approach of averaging the annual percent  
383 impact of the AMRP costs on customer bills over the entire Three-Year Plan period of  
384 2016-2018. PGL took the same approach for the 2011-2030 and 2011-2040 timeframes  
385 for the New Management Target Model case. This approach averages the low cost in the  
386 early years of the program with the higher cost in the later years as the program costs  
387 continue to accumulate.

388 The numbers presented by PGL do not tell the whole story and in fact misrepresent the  
389 real impact on customer bills over time. Focusing first on the impact of the Three-Year  
390 Plan and using the numbers calculated by the Company (but not shown in Mr.  
391 Hesselbach's testimony), in 2018 the average residential heating customer will pay  
392 approximately \$153 for the AMRP. Cumulatively, from the start of the program in 2011  
393 through 2018, the average residential heating customer will pay approximately \$585  
394 dollars.<sup>22</sup> This certainly presents a more alarming (and more accurate) picture of how

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<sup>22</sup> PGL response to data requests AG 1.03 and 2.01.

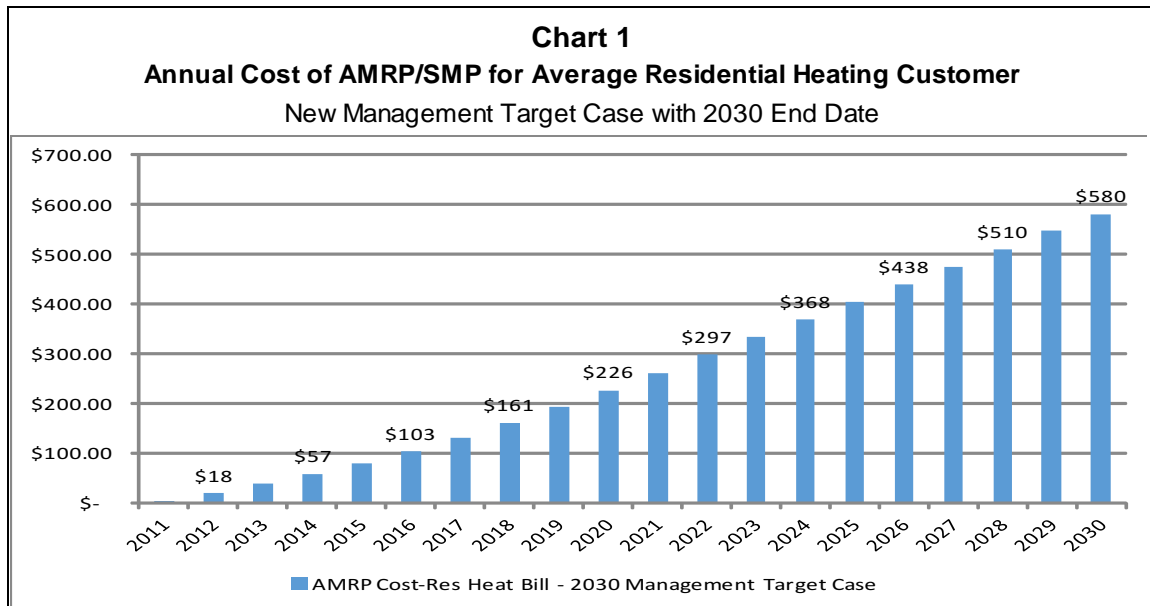
AMRP costs are escalating, accumulating, and affecting residential customer bills. PGL is forecasting SMP annual capital expenditures during the 2016-2018 Three-Year Plan ranging from \$250 million to \$280 million, and those capital expenditures will continue to ramp up.

With regard to the longer-term model scenarios of 2030 and 2040 under the New Management Target Case, the real picture of the cost impact on residential customer bills is even more profound. As stated earlier, I find that the \$6.8 billion of projected costs for a completion date of 2030 and \$7.8 billion for a 2040 completion date are almost certainly unachievable and are significantly understated. Still, under PGL's bill impact calculations, the average residential heating customer will pay \$580 on its annual bill in 2030 and \$14,557 over the life of the program.<sup>23</sup> This lifetime cost includes the full depreciation of the capital investments and related return on capital net of the deferred tax benefit. Chart 1 below shows the forecasted annual cost of the program for the New Management Target Case with a 2030 completion date for *only* the period of 2011 to 2030.<sup>24</sup>

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<sup>23</sup> Later in my testimony, I present a bill impact analysis using more realistic projected costs for the program.

<sup>24</sup> Although the construction phase of the program would end in 2030, the capital investments will continue to be depreciated past that date, and the revenue requirement will be recovered into 2063 with a total cost to the average residential heating customer of \$14,557.



The 2030 Model under the New Management Target Case assumes capital expenditures of \$309 million in 2016 with those expenditures escalating and reaching \$447 million in 2030. According to PGL’s calculations, the total revenue requirement over the life of the program, including full recovery of depreciation, return on capital investment, and deferred tax benefit, will be \$15.5 billion. Of this amount, \$9.6 billion will be billed to residential heating customers. These are staggering numbers, which are likely to rise even higher with a more realistic outcome and unless the AMRP program is moderated. To provide context, the revenue requirement in PGL’s last rate case was \$668 million.<sup>25</sup>

The 2040 model has more tempered capital expenditure levels of \$188 million in 2016 and reaching \$347 million in 2040.

<sup>25</sup> PGL response to data request AG 3.16(l).

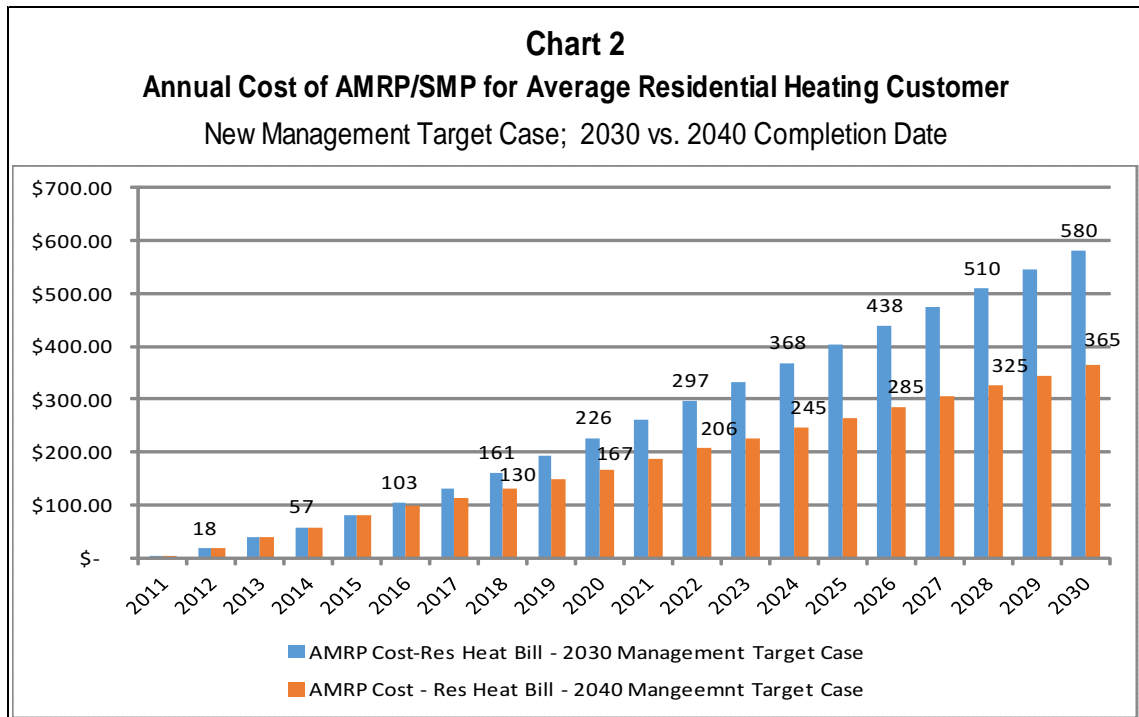


Chart 2 above shows how an extension of 10 years to the program end date can significantly reduce the impact on customer bills in the near term.<sup>26</sup>

However, it is worth noting that on page 32, lines 637 to 640 of his testimony, Mr. Hesselbach acknowledges that the 2030 and 2040 cost scenarios for the New Management Target Case are limited to capital expenditures for the accelerated main replacement program, while the 2016-2018 expenditures include the costs of non-AMRP projects that can be recovered through Rider QIP. This point confirms my earlier statement that when analyzing the impact of the AMRP on customer affordability, all bill impacts, including costs of non-AMRP projects, must be considered. In other words, Peoples Gas's long-term rate impact analysis includes only AMRP costs and assumes that

<sup>26</sup> Later in my testimony, I will show how the impact on customer bills can be moderated even further by limiting capital expenditures and extending the program over a longer time period.

the many other costs that are recovered through customer rates do not change over 15 to 25 years (based on 2030 and 2040 completion dates). Such an assumption is specious. The utility's approach is misleading because all costs recovered through customer rates affect customer affordability and must be accounted for.

**Q. IN HIS TESTIMONY MR. HESSELBACH STATES THAT CUSTOMERS ARE PROTECTED BY THE LIMITS ON RATE INCREASES IMPOSED BY THE RIDER QIP. DO YOU AGREE?**

A. No. Although Rider QIP, as codified by Section 9-220.3(g) of the Act, sets a maximum *increase*<sup>27</sup> in rates of 5.5% of delivery base rate revenues in any one year and 4.4% on average, it provides little protection when the capital expenditures and rate increases compound over a 15- to 25-year period, assuming a 2030 or 2040 completion date for the AMRP. A 4% average annual increase in rates solely for the AMRP translates to a cumulative increase of 100% over 25 years, or a doubling in customer rates, assuming PGL does not file new general rate cases.<sup>28, 29</sup> Of course, in reality, PGL will likely file for base rate increases at its discretion during that time – and there is no defined cap on the amount of QIP investment that can be incorporated into test-year rate base in a general rate case, other than a general prudence standard. Moreover, each time PGL receives a

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<sup>27</sup> This 4% increase is measured relative to PGL's delivery service base rate revenue from its most recent ICC general rate order. In the first year after a rate order, the QIP surcharge can be 4% of base revenue; in the second year, the QIP surcharge accumulates to 8% of base revenue; and so forth. The base revenue amount for the 4% calculation is reset with each new rate order, however; the new base revenue will include the revenue requirement for capital investments previously recovered through the Rider QIP.

<sup>28</sup> The 100% increase in reality is much larger because as PGL receives general rate increases there is a compounding effect that occurs when applying 4% on an increasing base of revenues.

<sup>29</sup> If recent history is any guide, it would be naive to assume Peoples Gas will not file new rate cases over the next two decades. PGL has filed five rate cases since 2007.

449 new rate order from the Commission, the Section 9-220.3(g) QIP surcharge cap is reset to  
450 zero, so that the following year can see a QIP surcharge equal to 4% of the new, higher  
451 base delivery service revenue level. If PGL filed annual general rate cases, the cumulative  
452 effect of annual 4% increases over 25 years – compounded geometrically – could reach  
453 167% or nearly a tripling of customer rates. Moreover, the effect of AMRP-related  
454 investment will be on top of other rate increases for the many other components of  
455 delivery service that PGL would request through general rate cases. For all these reasons,  
456 the operation of the Section 9-220.3(g) QIP surcharge cap does very little to moderate  
457 AMRP/SMP-related rate increases.

458 Moreover, my review of the legislative deliberations that occurred during the enactment of  
459 the legislation authorizing the Rider QIP determined that legislators in the Illinois House  
460 of Representatives had a much lower expectation of what the impact on customer bills  
461 would be if the legislation was passed.<sup>30</sup> AG Exhibit 2.3 includes an excerpt of the  
462 transcript of the legislative debate before passage of Senate Bill 2266 on May 27, 2013.<sup>31</sup>  
463 During debate of the Bill, Representative Phelps, the bill’s chief sponsor, stated that the  
464 average impact on customer bills for Peoples Gas from the legislation would be \$1.14 per  
465 month.<sup>32</sup> Representative Phelps also stated that Peoples Gas is willing to spend “a little  
466 over \$2 billion” on infrastructure improvements.<sup>33</sup>

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<sup>30</sup> Ill. Pub. Act 98-0057, enacted July 5, 2013, codified as 220 ILCS 5/5-111 and /9-220.3.

<sup>31</sup> Also available at: <http://www.ilga.gov/House/transcripts/Htrans98/09800064.pdf>.

<sup>32</sup> Page 156, lines 12-13 of the transcript. *See* AG Exhibit 2.3.

<sup>33</sup> Page 158, lines 19-20 of the transcript. *See* AG Exhibit 2.3.

The current AMRP program is on a much different track than what was envisioned, with the real impact on customer bills more than five-fold higher than what the Illinois legislators had anticipated. The following Table 6 shows a comparison between those expectations, PGL's best case scenario under its New Management Target case, and what I believe will be the most likely outcome at this point in time if the Commission does not restrain PGL's capital spending.

<b>Table 6</b> <b>Residential Heating AMRP Customer Bill Impact</b>			
	Expected IL House of Representatives	PGL Current Best Case	Most Likely Outcome
Program Construction Costs (Billions)	\$ 2.47	\$ 6.83	\$ 9.41
Monthly Cost to Customers at peak	\$ 1.14	\$ 48.75	\$ 65.17
Annual Cost to Customers at peak	\$ 13.14	\$ 584.95	\$ 782.07
Notes: HR transcript of Rider QIP legislative proceedings. PGL 2030 Target and Pre-Acq. Path cases.			

The transcript of the legislative proceedings and the table above clearly demonstrate that as the AMRP program costs have ballooned, the Rider QIP has not and will not protect customers from much higher bill increases. The combination of the Rider QIP and the ability to file general rate cases at any time gives PGL endless opportunities to increase rates to recover the cost of an ever-expanding capital expenditures program.<sup>34</sup>

<sup>34</sup> As Condition No. 1 to the approval of the merger transaction in ICC Docket No. 14-0496, PGL was bound to a two-year general rate increase moratorium from the closing date of the merger. The merger closed June

Therefore, Mr. Hesselbach's testimony that the Rider QIP offers rate protections to customers is meaningless.

**Q. IN HIS TESTIMONY, MR. HESSELBACH DISCUSSES THE OVERLAP OF CAPITAL EXPENDITURES UNDER THE PROPOSED AMRP WITH THE SCOPE OF THE CAPITAL EXPENDITURES RECOVERABLE UNDER RIDER QIP. WHAT IS YOUR IMPRESSION OF MR. HESSELBACH'S TESTIMONY ON THIS POINT?**

A. Mr. Hesselbach discusses at length how the Rider QIP legislation and mechanism allows for the recovery of a much broader scope of infrastructure capital expenditures than the capital expenditures that were included in the AMRP as originally proposed. The clear indication one gets from Mr. Hesselbach's testimony is that the AMRP is no longer about replacing leaky pipes to improve safety, but has become a component of a broader system modernization project that allows PGL to undertake capital spending to the limit of Rider QIP.

The tone of Mr. Hesselbach's testimony is very troubling because it portends significant increases in capital expenditures in the coming years and even larger increases in customer rates than we have seen historically. The Commission should be concerned with the increasing trend of capital expenditures under what Peoples Gas now terms a system modernization program. The Commission should warn PGL that unbridled increases in

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29, 2015, meaning that PGL could now file a new general rate increase request that would take effect any time after the end of June, 2017.



capital expenditures will not be tolerated and could potentially be disallowed if found excessive and imprudently incurred.

Annual reconciliations of Rider QIP spending under Section 9-220.3(e)<sup>35</sup> of the Act and Section 556.100<sup>36</sup> of the Commission's Rules give the Commission a granular look at individual investment decisions undertaken in a given year, but reconciliation proceedings are not the ideal vehicle for the Commission to examine the long-term financial effect of the overall scope of the AMRP. In *this* investigative proceeding, which is considering the AMRP from a broader perspective, the Commission should direct PGL to moderate capital expenditures to lower levels and be more selective in the programs that it undertakes in order to reduce escalating customer bills.

**Q. ARE THERE OTHER INDICATIONS THAT PGL AND ITS PARENT COMPANY, WEC ENERGY GROUP, ARE FOCUSED ON INCREASING CAPITAL EXPENDITURES AND INCREASING RATE BASE?**

A. Yes. I reviewed the September 2016 presentation that WEC Energy Group, Inc. ("WEC") made to securities analysts. In that presentation, WEC projected 6-8% earnings per share growth in 2016 with a 5-7% annual growth rate beyond 2016. The key driver of this long-term earnings growth rate is \$8.0 - \$8.5 billion of projected capital expenditures from 2016 to 2020 to increase rate base. The largest portion of planned capital expenditure would occur in WEC's natural gas business, of which PGL is a significant part. There was no

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<sup>35</sup> 220 ILCS 5/9-220.3(e)(2).

<sup>36</sup> 83 Ill. Adm. Code § 556.100.

discussion of sales growth to spur further earnings growth, only capital investments and rate base growth. With little or no sales growth, the increase in rate base must be recovered from the same customer base through commensurately higher rates. AG Exhibit 2.4 includes pertinent sections of the presentation supporting the numbers stated above.

When considering this information and the stated goal to grow rate base in order to increase earnings, it becomes abundantly clear why PGL seems overly focused on expanding the AMRP into a broader SMP and pushing capital expenditure levels to the limit of the Rider QIP cap, whether or not those expenditures are absolutely necessary to maintain a safe gas distribution system.

**Q. HAVE YOU DETERMINED WHAT THE FINANCIAL IMPACT OF THE AMRP WILL BE ON RESIDENTIAL CUSTOMER BILLS IF THE PROGRAM CONSTRUCTION COSTS REACH THE PRE-ACQUISITION PATH LEVELS?**

**A.** Yes. As I stated earlier, I am very skeptical that the AMRP program construction costs will be contained within the levels presented by PGL in the New Management Target Case. The Pre-Acquisition Path Case offers a more realistic portrayal of what the AMRP program may ultimately cost to complete within the 2030 and 2040 time horizons. These cost levels are also supported by the Jacobs 2015 forecast using a probabilistic model, as I discussed earlier. Although Jacobs' cost forecast is higher than the Pre-Acquisition Path Case, I am assuming that PGL's new management team can achieve some cost savings from the level projected by Jacobs. Furthermore, the expansion of the AMRP to

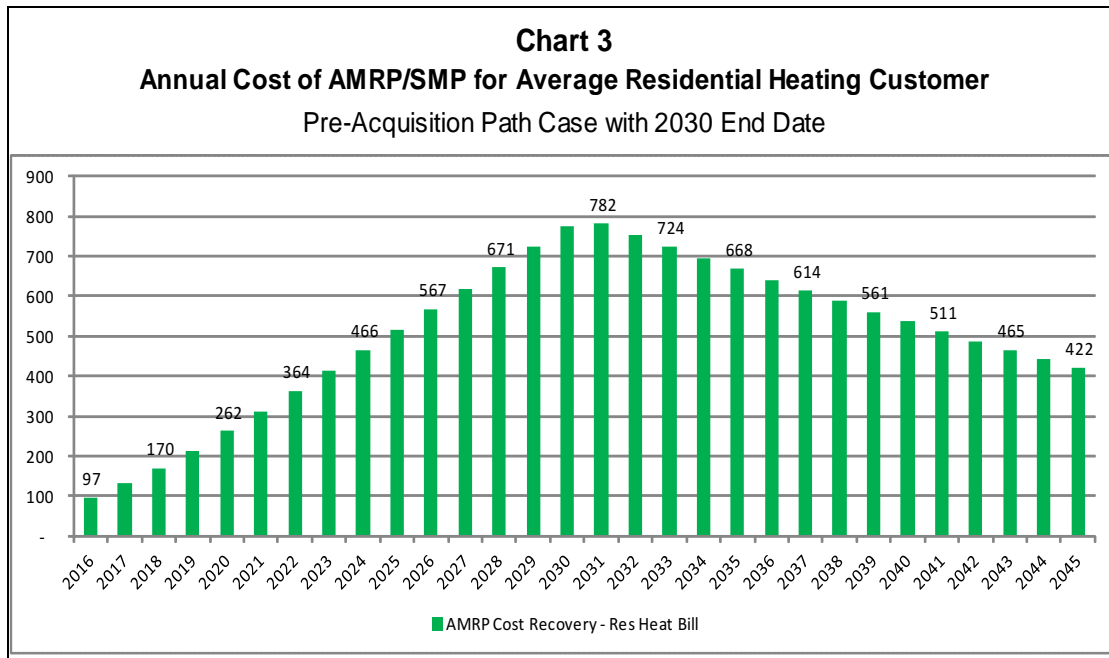
a broader SMP, as advocated by Mr. Hesselbach, will further increase capital expenditures above the levels projected by Burns & McDonnell in the Pre-Acquisition Path Case, as well as the other two cases. Therefore, it is very informative to see at a minimum what the potential impact on customer rates would be if the level of capital expenditures included in the Pre-Acquisition Path Case comes to pass.

As a reminder, Burns & McDonnell has projected that capital expenditures under the Pre-Acquisition Path Case will be \$9.41 billion if the program is completed by 2030, and \$10.96 billion if completed by 2040. Annual capital expenditures under the 2030 end date scenario are \$387 million in 2016 and increase to \$712 million by 2030. Under the 2040 completion date scenario, capital expenditures are \$208 million in 2016 and peak at \$575 million by 2040.

The total revenue requirement under the 2030 completion date scenario, including recovery of depreciation, return on invested capital, and net of the deferred tax benefit, is projected at \$20.4 billion over the time period from 2011 to 2055 to allow full recovery of the depreciated investment. Of this amount, \$12.2 billion would be billed to residential heating customers. The annual amount to be paid by the average customer peaks in 2031 at \$782 and the total amount that will be paid during the lifetime of the program is \$18,491. Chart 3 below shows the ramp up in the annual cost to be paid by the average residential customer over the next 30 years and the peak amount in 2031.<sup>37</sup>

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<sup>37</sup> Although the construction phase of the program would end in 2030, the capital investments will continue to be depreciated past that date and the revenue requirement will be recovered into 2055 with a total cost to the average residential heating customer of \$18,491.

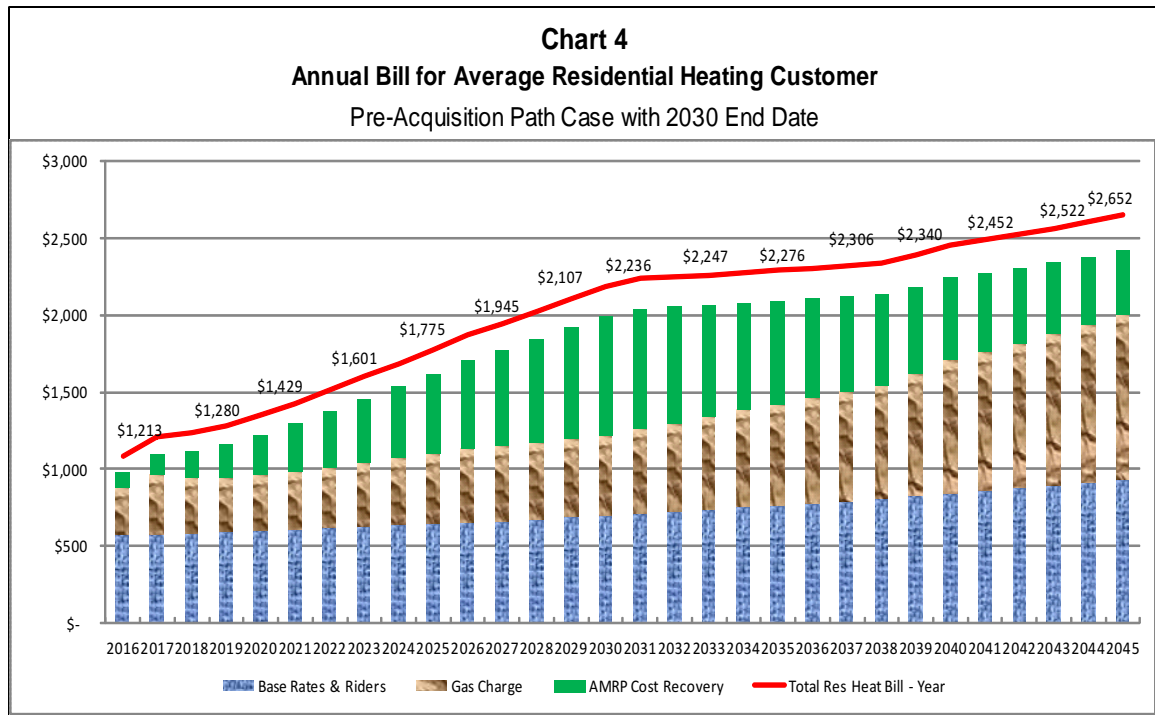


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558 AG Exhibits 2.5 and 2.6 include the data and calculations supporting these numbers. As  
559 large as these numbers are, they are only part of the total bill that the average residential  
560 customer will face in the coming decade or two. As I stated earlier, it is critical to  
561 consider this large impact from the AMRP in the context of increases in the other  
562 components of the customer bill.

563 Chart 4 below shows the levels that the total annual bill for the average residential  
564 heating customer may reach in the coming years. It includes the amount from the  
565 monthly charge and base distribution costs (excluding the AMRP cost to avoid double  
566 counting), the various riders and surcharges billed by PGL (excluding Rider QIP), the gas  
567 commodity charge, the AMRP cost, and city/state taxes.<sup>38</sup>

<sup>38</sup> City and State sales taxes are not separately identified but are included in the Total Bill line.



The chart shows that in about 15 years, the annual bill for the average residential customer will more than double, due primarily to the impact of the SMP. Anticipated increases in base rates due to other cost increases that PGL will face and increases in gas commodity costs from currently low levels will also contribute to the escalating annual bill.

AG Exhibit 2.7 shows the key assumptions used in developing the forecast cost components of the annual bill. Generally these assumptions are similar to those used by PGL, except that PGL did not forecast an increase in base rates and gas commodity costs, and chose not to present the total bill in Mr. Hesselbach's testimony.

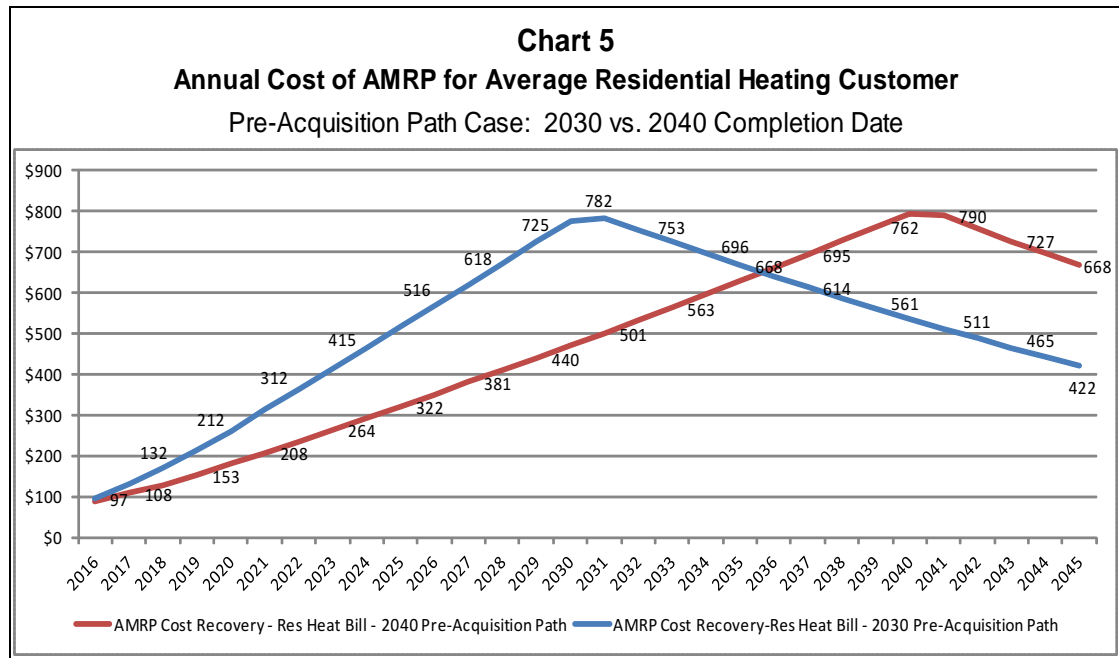
Although gas commodity costs and perhaps other cost increases may be outside of PGL's control, the pace at which PGL decides to pursue main replacement and other system

modernization programs certainly is within its control. These capital investments should be moderated significantly to minimize escalating customer bills.

**Q. HAVE YOU ALSO DETERMINED WHAT THE FINANCIAL IMPACT OF THE AMRP WILL BE ON RESIDENTIAL CUSTOMER BILLS IF THE PROGRAM IS EXTENDED TO 2040 UNDER THE PRE-ACQUISITION PATH CASE?**

A. Yes. Although the total nominal dollars of \$10.96 billion that would be spent over the longer time period ending in 2040 would be higher than an earlier completion in 2030, the present value of those capital expenditures is less. The present value of the capital expenditures of a 2030 end date is \$5.04 billion versus \$4.09 billion for a 2040 end date discounted at PGL's current pre-tax cost of capital rate of 9.61%. Furthermore, the extended completion date reduces the annual amount of capital expenditures.

Chart 5 below shows the impact of the AMRP on the customer bill in each year from 2016 to 2045, in comparison to the more accelerated 2030 completion date. Clearly, extending the program completion date reduces the financial burden on customers over at least the next 20 years.



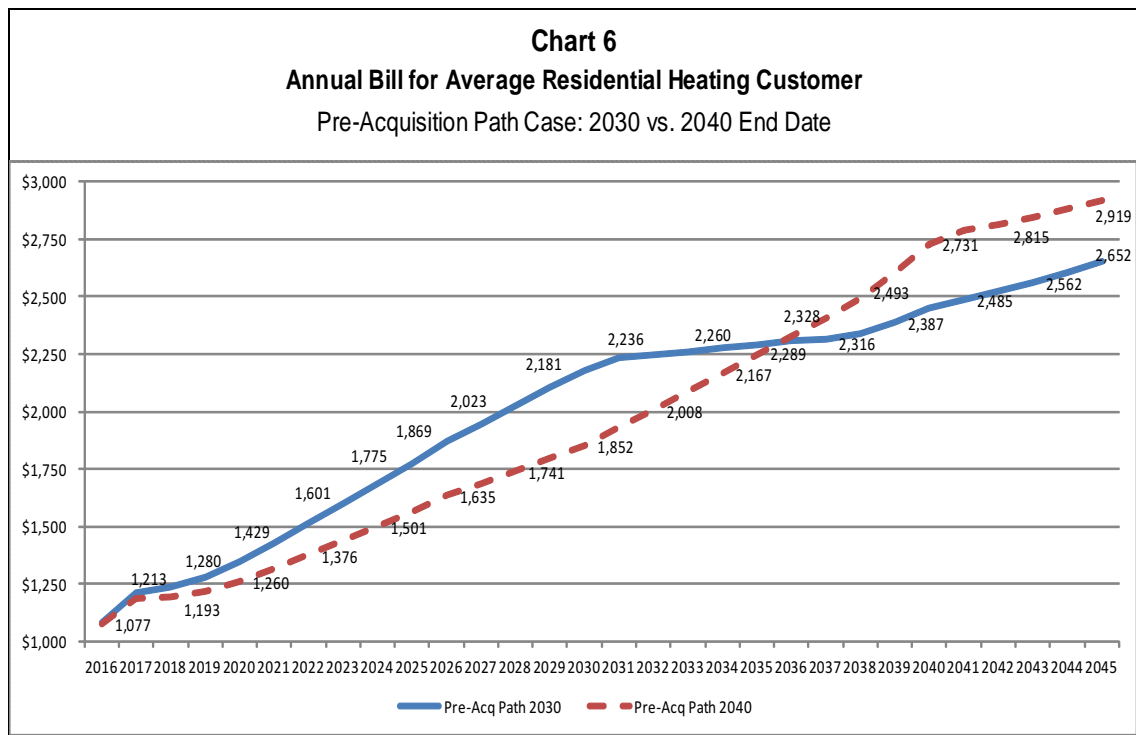
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The same is true when we look at the entire gas bill to be paid by the average residential

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heating customer. Chart 6 below shows the comparison in the total annual bill.



Although this extended program with a 2040 target completion date is an improvement over a more accelerated program, it still has too high of a negative impact on residential customers' ability to pay.

**Q. HAVE YOU PREPARED A FINANCIAL CASE THAT WOULD FURTHER MINIMIZE THE IMPACT OF THE AMRP ON RESIDENTIAL CUSTOMER BILLS?**

A. Yes. Based on my reading of the legislative hearing transcript discussed above, it appears that the intent of the Illinois General Assembly in passing the legislation allowing for the Rider QIP was to permit an accelerated infrastructure replacement program at the level of "just over \$2 billion." Consistent with the General Assembly's apparent assumption and unless safety considerations dictate otherwise, the annual pace



of implementation of the AMRP should proceed at a level consistent with the originally anticipated total program cost with appropriate inflationary cost escalations going forward, at least at this point in time. PGL should work within that capital budget constraint.

The projected cost of the AMRP has increased by almost five-fold. Customers' household budgets have not grown five-fold since the AMRP was launched in 2011. Customers do not have unlimited resources to pay for the higher cost of AMRP within the same timeframe of the original program. In fact, the City of Chicago demographics show that many of Peoples Gas's customers are struggling to make ends meet with stagnant wage growth and must live within very tight budgets. There is no reason why PGL should not live within a more moderate capital budget.

Peoples Gas proposed the AMRP in its 2009 rate case, Docket No. 09-0167. There, PGL witness Salvatore D. Marano forecasted that PGL would spend \$2.47 billion on the AMRP from 2011 to 2029.<sup>39</sup> The average capital expenditures over the 19-year period were approximately \$130 million and ranged from a low of \$93 million in 2012 to a high of \$223 million in 2020. We must remember that this was a significantly accelerated capital expenditure program from the path that PGL was on prior to the 2009 rate case.

Adopting an annual budget starting at \$130 million in 2016 and escalating it annually at an inflationary rate of 3% going forward to completion of the program would be more in keeping with the original intent of the AMRP. Such a moderate capital expenditure

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<sup>39</sup> Peoples Gas Ex. SDM-1.18 Rev. in ICC Docket No. 09-0167, available at: <https://www.icc.illinois.gov/downloads/public/edocket/250106.pdf>.

budget would be more affordable for customers and likely adequate to replace the most vulnerable and risky mains at a reasonable pace.<sup>40</sup>

Q. **ASSUMING PEOPLES GAS REDUCED EXPENDITURES TO THE AVERAGE LEVEL OF \$130 MILLION IT FORECASTED IN ITS 2009 RATE CASE AND ESCALATED AT A 3% ANNUAL INFLATIONARY INCREASE, HOW LONG WOULD IT TAKE TO COMPLETE THE AMRP?**

A. If we assume that the total cost to complete the AMRP will be \$9.69 million, then it is likely the project would be completed by 2053. I chose the \$9.69 million cost because it is equivalent to PGL's Contingency Case with a 2040 target end date. As I stated earlier, I am hopeful that the new management team can achieve some cost savings over the Pre-Acquisition Path base case.

The other question to be answered is whether a scaled-down program would allow PGL to replace the most vulnerable pipe segments that have the highest safety risks each year. The Commission needs to challenge PGL to answer this question. The analysis performed by AG witness Neale demonstrates that PGL is not focusing on the most leaky and risky mains. A revamped program to replace those segments instead of addressing whole neighborhoods could be more effective in reducing risk and increasing safety.

However, if the Commission becomes convinced that the neighborhood approach is the best approach, the other option is for PGL to reduce the number of neighborhoods

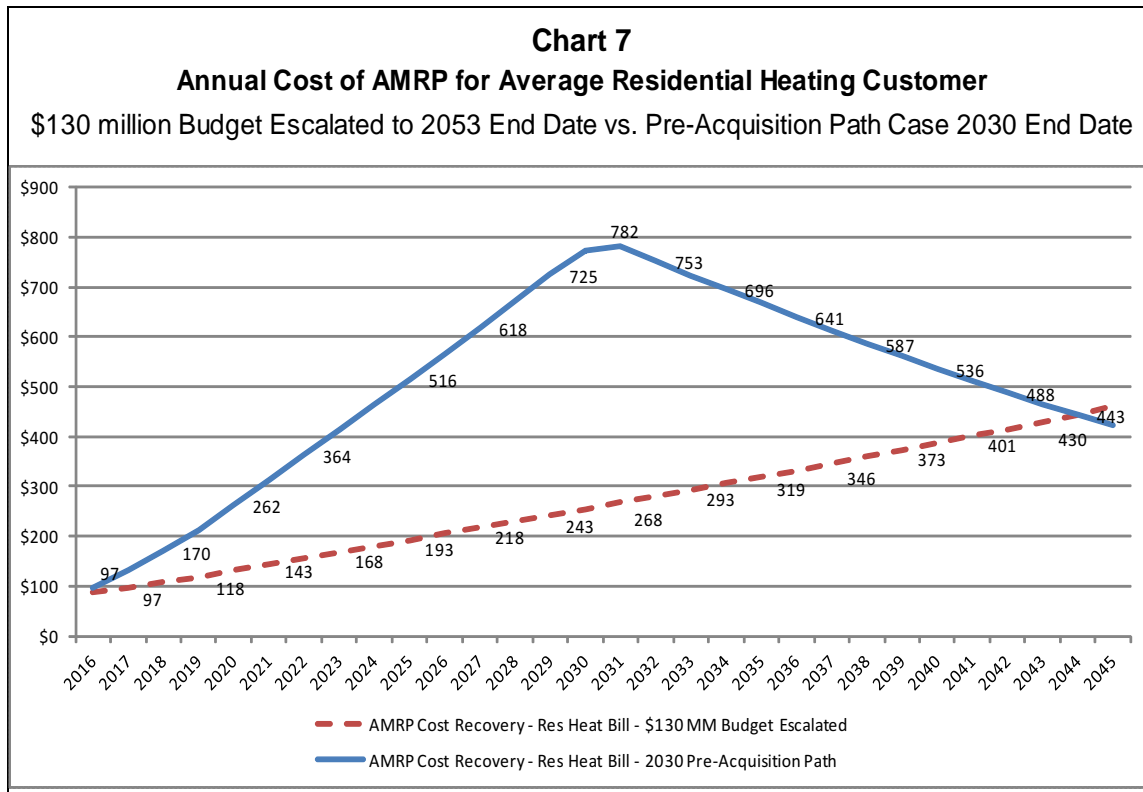
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<sup>40</sup> As I stated earlier, my moderate spending level for the AMRP assumes that Peoples Gas can define a program that focuses on replacing the most leaky and risky pipes and thus maintain a safe gas distribution system.

649 completed each year and the work done within those neighborhoods at the more moderate  
650 \$130 million escalated annual budget by prioritizing and completing those neighborhoods  
651 with the riskiest main segments first. This alternative approach would mitigate the safety  
652 issues and reduce the cost impact on customer bills by extending the completion date  
653 over an additional 13 years from 2040 to 2053.

654 Such an extended program completion date seems reasonable because no evidence has  
655 been presented by PGL that extending the program completion past 2050 for those main  
656 segments less prone to failure would present unmanageable safety risks. To the contrary,  
657 the March 1, 2007 Kiefner and Associates, Inc. study stated that some of the larger cast  
658 iron and ductile iron mains could last decades past 2050.

659 Using the average annual expenditure of \$130 million proposed by Mr. Marano in his  
660 testimony in PGL's 2009 rate case and further escalating that amount at 3% annually (the  
661 \$130 Million Capital Budget Case") would reach capital expenditures of over \$200  
662 million in 2031 and \$376 million by 2052. Under this scenario, the amount billed to the  
663 average residential heat customer for the AMRP in comparison to the Pre-Acquisition  
664 Path case would be dramatically lower. The following chart shows this comparison over  
665 the 2016 to 2045 timeframe.



Although the annual amount under the \$130 million Capital Budget Case continues to increase past 2045, the rate of increase is more gradual and is spread over a longer time period. AG Exhibits 2.8 and 2.9 include the cost and revenue requirement schedules for this case, showing the cost impact on the average residential customer over the lifetime of the program and full recovery of total costs.

AG Exhibit 2.8 also shows that the present value of the stream of payments to be made by the average residential heating customer over the lifetime of the program is \$2,484 under the \$130 million Capital Budget Case.<sup>41</sup> This amount is substantially lower than

<sup>41</sup> To determine the present value, the stream of payments over the respective timeframe in each case was discounted at PGL's pre-tax cost of capital of 9.61%. This rate was used because the revenue requirement calculation to establish the annual customer payment amount utilized this pre-tax rate of return. Therefore, any

the present value of the payments that the customer would make under the Pre-Acquisition Path Case of \$4,574 and \$3,741 for the 2030 and 2040 completion date scenarios, respectively. This indicates that there is an economic benefit to the customer by extending the completion of the program and achieving certain cost efficiencies over the base case.

Although PGL could argue that the present value of the customer payment made under the New Management Target Case is slightly lower than the \$130 million Capital Budget Case, the comparison is not valid.<sup>42</sup> As discussed earlier, the construction costs for the New Management Target Case are significantly understated and should not be relied on by the Commission. The total annual gas bill under this moderate Capital Budget Case is also much lower over the next 25 years. For example, by 2031, the annual bill would be 25% lower under the Capital Budget Case than the Pre-Acquisition Base Case (\$1,678 vs. \$2,236).<sup>43</sup>

**Q. ON PAGE 8 OF HIS TESTIMONY, MR. HESSELBACH STATES THAT THE ACCELERATED CAPITAL SPENDING AND THE IMPACT ON CUSTOMER BILLS HAVE BEEN MITIGATED BY LOW AND RELATIVELY STABLE NATURAL GAS PRICES AND BONUS TAX DEPRECIATION. HOW DO YOU RESPOND?**

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changes in the amount and timing of capital investments from case to case, and the related revenue requirement, are affected by this common rate of return.

<sup>42</sup> The present value of the stream of customer payments under the New Management Target Case is \$2,157 for the 2030 completion scenario and \$1,804 for the 2040 end date scenario.

<sup>43</sup> AG Exhibit 2.9 WP1.

693 A. With regard to the current historically low natural gas prices, those gas prices will not  
694 remain low indefinitely. With many gas producers facing bankruptcy and reduced  
695 natural gas exploration, the excess gas supply situation that has existed for several years  
696 will soon vanish. Additionally, political currents could lead to new regulation of  
697 hydraulic fracturing processes, which could increase production costs. And with more  
698 power plants migrating to natural gas as a fuel for power generation and replacing coal  
699 plants that are shutting down, the demand for natural gas will increase in coming years.  
700 The combination of tightening supply and increasing demand will put upward pressure on  
701 natural gas prices. Potentially higher gas prices in coming years will exacerbate  
702 customers' gas bills that are increasing because of AMRP investments. As I mentioned  
703 earlier, Peoples Gas did not include any increases in the cost of natural gas in its  
704 assessment of service affordability. Increasing gas prices will further strain customers'  
705 ability to afford essential natural gas service.

706 As to the issue of bonus tax depreciation, the current Internal Revenue Code provides for  
707 a declining rate of bonus depreciation from 50% in 2016 to 30% in 2019, after which it  
708 expires.<sup>44</sup> Although the bonus depreciation increases tax depreciation and deferred taxes  
709 in the year that it is taken, it reduces depreciation in later years. Therefore, the benefit of  
710 reducing the revenue requirement and customer bills is short-lived. The Commission  
711 should not rely on this short-term benefit to justify a large capital expenditures program.  
712 The compounding effect of a large capital program recurring year-in and year-out far  
713 outstrips the benefit of bonus depreciation on deferred taxes. AG Exhibit 2.5 shows how

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<sup>44</sup> See 28 U.S.C. §§ 168(k)(1)(A), (k)(2)(A)(iii), (k)(6).

714 limited the benefit of the bonus depreciation is. The amount of rate base in column (h)  
715 shows that the increase in deferred taxes in column (g), inclusive of the benefit of the  
716 bonus depreciation through 2019, is more than offset by the increase in plant additions.  
717 The result is an increasing revenue requirement in column (j). A comparison of AG  
718 Exhibit 2.5 and AG Exhibit 2.8 shows more dramatically how the level of capital  
719 expenditures affects revenue requirement and ultimately the impact on customer bills  
720 much more than any benefit from bonus depreciation.

721 **Q. IN FOOTNOTE 9 ON PAGE 32 OF HIS TESTIMONY, MR. HESSELBACH**  
722 **STATES THAT THE CALCULATION OF THE CUSTOMER BILL IMPACT**  
723 **DOES NOT INCLUDE THE BENEFIT OF BONUS DEPRECIATION. IS THIS A**  
724 **CORRECT STATEMENT?**

725 A. No. In response to a data request, PGL clarified that the customer impact numbers for the  
726 2030 and 2040 model reflect the benefit of bonus depreciation. However, the numbers  
727 under the Three-Year Plan do not reflect this benefit.<sup>45</sup>

728 **CUSTOMER BILL AFFORDABILITY**

729 **Q. WHY IS IT IMPORTANT FOR THE COMMISSION TO EXAMINE**  
730 **AFFORDABILITY ISSUES IN THE CONTEXT OF THIS PROCEEDING?**

731 A. I am advised by counsel that affordability of utility rates has been declared by the Illinois  
732 General Assembly to be a goal of the regulatory process in this state.<sup>46</sup> PGL stated in a

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<sup>45</sup> PGL response to data request AG 1.07.

discovery response that, in planning its AMRP/SMP activities, it has given no specific consideration to affordability of natural gas service other than the QIP surcharge caps imposed by Section 9-220.3(g) of the Act.<sup>47</sup> However, as I discussed above, those caps impose very little effective limit on QIP cost recovery and, moreover, represent dollar amounts far in excess of what the General Assembly apparently understood the program would cost when it enacted that law. For these reasons and as a crucial part of its overall examination of the scope and structure of the SMP, the Commission should assess the affordability of PGL's System Modernization Program using additional metrics and touchstones other than those in Section 9-220.3(g).

**Q. PLEASE DESCRIBE HOW CERTAIN SEGMENTS OF PGL'S CUSTOMER  
BASE FACE SIGNIFICANT ECONOMIC CHALLENGES TO PAY  
INCREASING GAS BILLS.**

A. The following statistics show the economic challenges faced by a large segment of PGL's customer base:

1. 34% of PGL's customers live below 150% of the federal poverty level.<sup>48</sup>
2. The Median Household Income in the City of Chicago in 2014 was \$47,831. Approximately 115,000 households earned under \$10,000; 176,000 households earned under \$15,000; and 349,000 households earned under \$30,000.<sup>49</sup>

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<sup>46</sup> See 220 ILCS 5/1-102(d)(viii).

<sup>47</sup> PGL response to data request AG 2.02 (referring to PGL Ex. 1.0 at 28:557 - 29:569).

<sup>48</sup> American Community Survey (2014), Table B17002.

<sup>49</sup> *Id.* (2014:5-Year data), Tables B19001, B19013.



3. The difficulty in paying PGL gas bills is reflected in the following numbers from the 12-month period ending April 30, 2014:<sup>50</sup>

- a. 230,075 accounts received disconnection notices;
- b. 77,475 accounts were actually disconnected;
- c. 78,019 accounts entered into deferred payment agreements; and
- d. 75,450 accounts enrolled in LIHEAP.

4. PGL has the highest monthly customer charge and distribution rates of any major gas utility serving customers in the State of Illinois.

5. From 2008 to 2015, PGL has increased base rates five times, totaling \$276.5 million, or a 73.8% increase over a seven-year period.

AG Exhibits 2.10 and 2.11 provide additional information on customer income profiles and PGL rates.

**Q. IS IT YOUR ASSESSMENT THAT THE CUSTOMER AFFORDABILITY GAP WILL GROW IF PGL PROCEEDS WITH THE PROPOSED SCALE AND TIME HORIZON OF THE AMRP/SMP?**

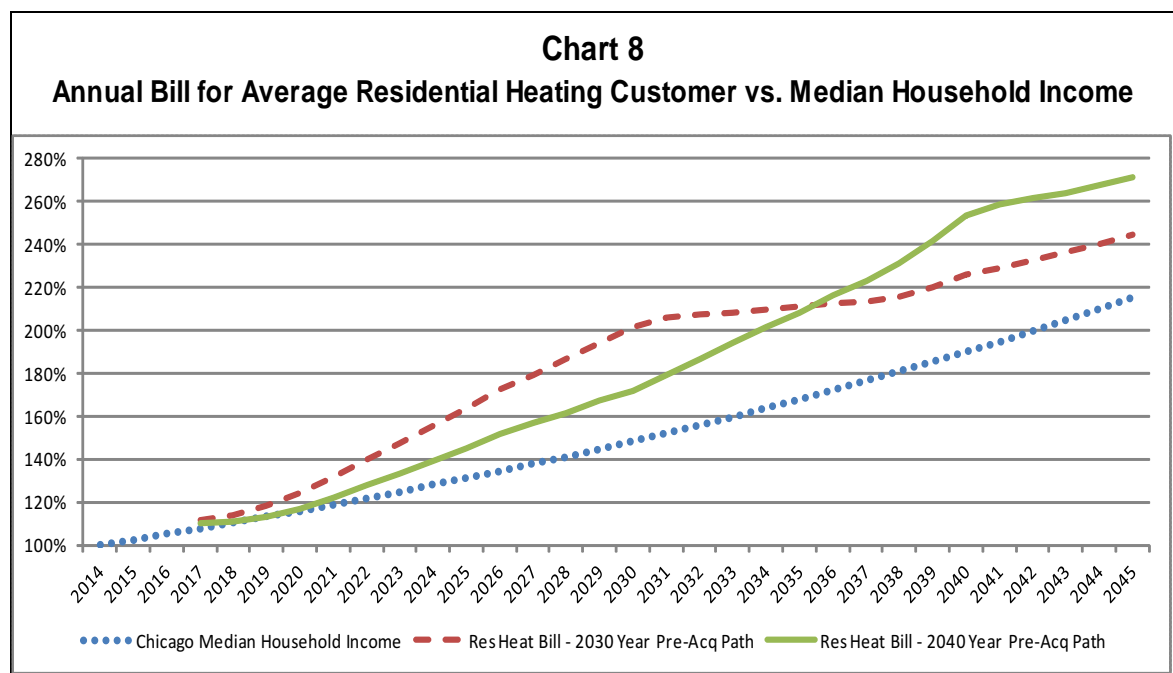
A. Yes. As described throughout my testimony above, the likely cost outcome of the AMRP will be in the range of \$9-10 billion. As shown in Chart 3 on page 32 above, the total annual bill for the average residential heating customer will nearly double in the next 15 years from \$1,213 in 2016 to \$2,236 in 2031, while the annual cost attributable to the AMRP alone will reach over \$780 by the 2030s. These are extremely large numbers for the 349,000 households to pay to maintain essential service of natural gas to warm their homes, cook their food, and heat their water when they earn under \$30,000 a year. And,

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<sup>50</sup> ICC Docket Nos. 14-0224/0225 (cons.), AG Exhibit 10.2 at 8, 10, 12; AG Exhibit 10.3 at 2, available at: <https://www.icc.illinois.gov/docket/files.aspx?no=14-0224&docId=218419>.

as a reminder, those customer bills don't include the cost of the higher expenditures that PGL wants to undertake under an expanded SMP.

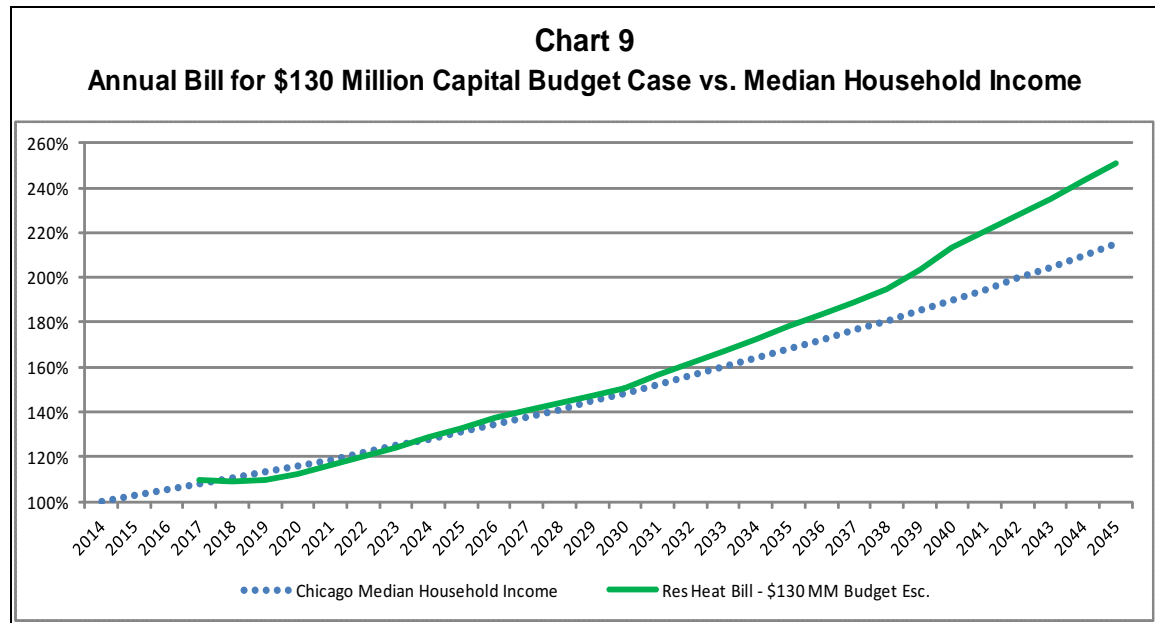
Chart 8 below shows how the affordability gap will likely grow as the annual bill for the average residential customer increases at a higher rate than the average household income for Chicago residents over the coming years. I have assumed that the average household income will grow at an annual rate of 2.5% from 2015 to 2045. This rate of increase is somewhat optimistic given that from 2011 to 2014 the median household income in the Chicago area was rather stagnant after declining from 2010.



As is apparent from the chart above, whether PGL completes the AMRP by 2030 or 2040 at a cost of \$9.41 billion or \$10.96 billion, the annual gas bill for the average residential customer will become less and less affordable.

A lower annual capital spending program completed over a longer timeframe is the best

way to make annual gas bills more affordable for customers of PGL. Chart 9 below shows how the \$130 million escalated Capital Budget Case that I discussed earlier significantly reduces the bill affordability gap.



A recent study performed by Fisher, Sheehan & Colton, a public utility economics research firm, determined that the "affordable burden" for home heating and cooling bills is 2% of gross household income.<sup>51</sup> This affordability level would imply a total annual bill of \$1,005, including the cost of electricity for air conditioning and powering the furnace, for a median household income customer of PGL earning \$50,252 in 2016.<sup>52</sup> The affordability level for gas heating a home alone is estimated at 85% of the \$1,005 or

<sup>51</sup> Defining the Affordability Gap, published by Roger D. Colton, Fisher Sheehan & Colton, [http://www.homeenergyaffordabilitygap.com/01\\_whatIsHEAG2.html](http://www.homeenergyaffordabilitygap.com/01_whatIsHEAG2.html). The affordability level for all home energy bills is 6% of average household median income. This includes electricity costs for lighting and to power all other home appliances and equipment. The 6% is calculated based on the premise that utility costs should not exceed 20% of shelter costs. Moreover, it is based on the premise that total shelter costs should not exceed 30% of income. Therefore, 20% of 30% yields a 6% affordable utility burden. Based on data collected from the Department of Energy, it is estimated that approximately one-third of the total home energy bills relate to heating and cooling, or approximately 2%.

<sup>52</sup> Chicago Median Household Income of \$47,831 in 2014 escalated at 2.5% in 2015 and 2016.

796 \$854.<sup>53</sup> As shown in Table 1, the average PGL residential heating customer bill in 2016  
797 is estimated at \$1,085. Therefore, the affordability gap for the average Chicago  
798 household is approximately 27% ( $1,085 - 854 = 231 \div 854$ ). This gap will grow  
799 substantially with PGL's proposed AMRP/SMP capital program over the next 15 years.

800 By 2031, the affordability level of the annual PGL total gas bill at 2% of the forecasted  
801 median household income would be \$1,237 (Median Household Income of \$72,781 \* 2%  
802 \* 85%).<sup>54</sup> The *projected* PGL total gas bill in 2031 will be \$2,236, assuming the Most  
803 Likely Outcome for the AMRP.<sup>55</sup> The difference represents an annual affordability gap  
804 of \$999, which is more than 80% above the affordable level.

805 It is also important to note that the affordability burden increases significantly for those  
806 customers who have household incomes below the median. As stated earlier and shown  
807 in AG Exhibit 2.10, 349,000 households in the City of Chicago had household incomes  
808 of less than \$30,000 in 2014; they could have afforded total annual gas bills of only \$510  
809 ( $\$30,000 * 2\% * 85\%$ ) or less. By comparison, the Company has around 661,000  
810 residential heating customers.<sup>56</sup>

811 The \$130 million Capital Budget Case shows that a more moderate capital program can  
812 reduce the annual customer bill to \$1,678 in 15 years, thus significantly reducing the

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<sup>53</sup> Roger Colton study workpapers.

<sup>54</sup> Chicago Median Household Income of \$47,831 in 2014 escalated at 2.5% through 2031.

<sup>55</sup> See Table 2 on page 7.

<sup>56</sup> PGL response to data request AG 3.15(i).

813 affordability gap and the financial burden on the most vulnerable customers of Peoples  
814 Gas.

815 **RECOMMENDATIONS**

816 Q. **HOW CAN THE COMMISSION ENSURE THAT THE AMRP/SMP PROCEEDS**  
817 **ON A PACE THAT IS AFFORDABLE TO CUSTOMERS IN COMING YEARS?**

818 A. The Commission should reject PGL's proposed Three-Year Plan to spend \$250 million to  
819 \$280 million annually and expand the scope of the AMRP into a broader SMP. Such a  
820 capital expenditure level, which will continue to escalate in future years, will impose an  
821 unacceptable financial burden on PGL customers. Simply put, large numbers of  
822 residential customers will likely be unable to afford the high and escalating bills resulting  
823 from PGL's proposed SMP capital program.

824 To continue on the course that PGL has proposed will have a devastating effect on  
825 residential customers and will likely significantly increase uncollectible accounts expense  
826 as more and more customers will find that they are unable to pay higher and higher gas  
827 bills. This, in turn, will increase rates and bills for paying customers, thus creating a  
828 further negative spiral of bill affordability.

829 Therefore, consistent with Mr. Neale's testimony, I recommend that the Commission  
830 direct PGL to prioritize its mains, service lines, and meter move-out program in order to  
831 replace the riskiest segments first within an established annual capital budget  
832 significantly lower than what has been proposed. My testimony provides a clear

indication that a capital expenditures program beginning at \$130 million and escalating at an annual rate of 3% would make the AMRP/SMP more affordable for customers.

Without such protections and a redefined and moderated scope of the program, all indications are that PGL will continue to increase capital expenditures in future years to a level that will make gas bills unaffordable for a substantial segment of residential customers.

**Q. DO YOU RECOMMEND THAT PEOPLES GAS SHOULD BE REQUIRED TO SUBMIT ADDITIONAL REPORTS TO THE COMMISSION?**

**A.** Yes. Peoples Gas should be required to present a complete, detailed, work plan annually for the remainder of the AMRP program that shows:

1. The planned main replacement segments and related infrastructure projects for the upcoming 12-month period and their related cost;
2. The Uniform Main Ranking Index ("UMRI") of each main segment planned for replacement;
3. A list of the main segments and related infrastructure projects that are still in need of replacement, along with the respective UMRI ranking and projected cost to complete;
4. The total projected annual cost to complete the program and quantity of mains, services, meters and other infrastructure to be replaced and installed;
5. A detailed corrective action/implementation plan for improved coordination with the City of Chicago for permit and public works activities; and
6. A detailed corrective action plan and status report for implementation of the approved final recommendations from the Liberty audit report.

856 These reports should be provided at least 60 days before the beginning of each annual  
857 QIP cycle.

858 **Q. WHAT PERFORMANCE BENCHMARKS DO YOU RECOMMEND?**

859 A. The Commission should require Peoples Gas to benchmark the performance of the  
860 AMRP against the approved annual and long term capital program goals in the following  
861 areas:

- 862 1. Miles of main retired;
- 863 2. Miles of MP and HP miles installed;
- 864 3. Service lines replaced;
- 865 4. Meters moved out;
- 866 5. Cost per mile of MP main installed;
- 867 6. Cost per mile of main retired;
- 868 7. Cost per mile of HP main installed;
- 869 8. Cost per service line replaced;
- 870 9. Cost per meter move-out;
- 871 10. Restoration cost per mile and percent improvement;
- 872 11. SI and PI projects completed and related capital expenditures;
- 873 12. Percent improvement in Contract Labor Efficiency;
- 874 13. Percent improvement in Installation Efficiency;
- 875 14. Percent improvement in Project Management Efficiency;
- 876 15. Adequacy of cost contingency factor;
- 877 16. Percent decline in annual O&M expense for mains & services;
- 878 17. Percent decline in gas leaks;
- 879 18. Percent decline in lost and unaccounted for gas on a rolling 3-year cycle;
- 880 19. Other productivity/efficiency measures that PGL deems appropriate; an
- 881 20. Actual completion timeline versus forecasted timeline for annual projects and
- 882 toward final completion of the AMRP.

883

884 Q. **DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

885 A. Yes. However, I reserve the right to amend, revise or supplement my testimony to  
886 incorporate new information that may subsequently become available.